

Optimization of the Family in the Treatment of DM and Gangrene with Herbal Therapy

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ABSTRACT

Diabetes Mellitus (DM) is a chronic disease with a high incidence in almost all countries. Diabetes Self-Management Education (DSME) is a health education process for individuals and families managing DM patients. The solution provided through this engagement is applying the DSME method to partners by applying for the program: 1. Assistance on DM material, diet planning, signs and symptoms, and how to handle hypo and hyperglycemia conditions; 2. Utilizing local plants as herbal therapy; 3. Training on treating gangrene wounds with the wisdom of herbal therapy using turmeric and betel leaves. The observation was for six months, and intervention was given for one month. The results of the monitoring family can provide and serve food for families with DM, there is no gangrene wound, and they can apply gangrene wound treatment using turmeric and betel leaf herbs.

INTRODUCTION

Diabetes Mellitus (DM) is a severe problem with a high incidence in almost all countries, including Indonesia. WHO states that the role of the community, especially the family, is very significant in minimizing the impact of DM. Early prevention is a more effective method of controlling DM through self-care efforts for patients in the family (Home health care) (Cho & Kim, 2021). Promotive and preventive efforts without neglecting curative and rehabilitative efforts are the home health care movement.

Home healthcare programs can encourage patients to use existing resources to manage their symptoms, especially in patients with chronic diseases such as DM (In Pollina et al., 2017). Self-management programs can facilitate patients in prevention and treatment activities need a self-management program with health education that encourages patient independence so that they can manage their health independently. Diabetes Self-Management Education (DSME) is a health education process for individuals or families in managing diabetes developed in the 1930s by the Joslin Diabetes Center (Banerjee et al., 2020). SME uses guidance methods, counseling, and behavioral interventions to increase knowledge about diabetes and improve individual and family skills in managing DM disease.

Interview results and observations with Partners, the problems faced by Partners include: eight families are suffering from DM out of 30 Heads of Families (KK), and two families have gangrene wounds. Most family members do not understand how to care for families with DM, especially maintaining blood sugar stability and providing the proper diet. Family members with gangrene wounds are only left alone and treated soberly with betadine, so the wound widens and does not heal. The blood sugar check results were still high for the two participants, 300 grams/dl and 250 grams/dl.

Gangrene is a disease that is a significant cause of morbidity and mortality and requires long and expensive treatment. DM patients with gangrene wounds increased to 19-34%; the ulcer recurrence rate remained high, almost 40% - 65% in the last five years (Reardon et al., 2020). Inadequate handling and delays in intervention in gangrene wounds lead to amputation (Pitocco et al., 2019). Herbal/traditional medicine is one practice that has become popular by reducing the side effects of chemicals (Dan et al., 2018).

This service focuses on disseminating treatment with local wisdom using turmeric and betel leaves, which grow a lot in housing, as ingredients for healing gangrene wounds (Dan et al., 2018; Akita et al., 2019). In addition to accelerating healing, Turmeric has the potential as an antimicrobial, controlling bacterial growth and accelerating wound healing (Shedoeva et al., 2019). Turmeric content (curcuminoids) 71.5% curcumin (curcumin I), 19.4% demethoxycurcumin (curcuminII), and 9.1% bisdemethoxycurcumin (curcumin III) (Amalraj et al., 2017). While the content of betel leaves benefits as an antibacterial, anti-cariogenic, anti-fungal, anti-larval, anti-protozoal, anti-filarial, anti-allergic, anti-diabetic, antihelminthic, anti-tumor, antibacterial hypotensive, respiratory, and depressant effect (Madhumita et al., 2020).

IMPLEMENTATION AND METHODS

The service is carried out from February - June 2023, divided into two activities, the first month of implementation and the last three months of evaluation. The family competence improvement program through program begins with sharing knowledge with families on how families take care of members who suffer from DM. After the experience-sharing session, the Team explained to partners about planning the proper diet for family members with DM. The second material is about the characteristics of patients with hypo and hyperglycemia. It is hoped that families who understand the characteristics of people with hypo and hyper families can assist more quickly when these incidents occur. The purpose of the first and second materials is to stabilize the patient's blood sugar, and there is no fluctuating blood sugar level.

The third topic of this program is how to monitor blood sugar and cholesterol levels regularly and exercise legs with patients and family members. The fourth material is Learning management and providing support to patients, so they want to do treatment regularly and adequately and participate in the program held by the Healthcare Center for DM patients. Meanwhile, the five ways to treat DM patients with gangrene are based on local wisdom, utilizing plants around the housing using turmeric and betel leaves. This program is the last program in community service to distribute science and technology magic to the community. The family is taught to treat wounds directly with herbal techniques. Partners are given SOP modules for making this herbal therapy.

RESULTS AND DISCUSSION

Material 1-4 given to partners through the program DSME can answer partners' problems about partners' ignorance of how to care for family members who suffer from DM. Treatment of patients with DM and the complications it causes takes a long time and costs a lot. These treatments can place a burden on the patient and family. With this service program, it is hoped that it can change behavior to carry out independent care, and families and patients can manage their health, so it is hoped that the life expectancy and productivity of DM sufferers will remain high (Lambrinou et al., 2019). The material provided by TIM is given in its entirety, both the risk factors, the diagnosis, the treatment, and the complications.



Figure 1. Sharing knowledge of how to care for DM's family

Implement gangrene wound care using turmeric and betel leaf herbal therapy that utilizes plants around Mitra's house. Turmeric has the potential to heal wounds by increasing cell proliferation and collagen synthesis in wounds. The curcumin content in turmeric increases the wound tissue's DNA, total protein, and Type III collagen content. In addition, the content of curcumin as an antioxidant can accelerate the wound-healing process (Amalraj et al., 2017; Salehi et al., 2021; Adeliyana et al., 2021). Betel leaves are mixed with grated turmeric and placed on the wound, but before being attached to the mixture, the wound is treated to clean the wound. Grated turmeric and betel leaf are attached to the wound with a sterile gauze pad.

The ingredients are betel leaf (*Piper betle* L.) saponins, tannins, and flavonoids. The tannin content functions as an astringent, stopping bleeding and accelerating wound healing and inflammation of mucous membranes. In addition, the betel leaf can be used for new tissue regeneration. Saponins can help wound healing by forming the first collagen, which is critical in wound healing (Musfira et al., 2019). Meanwhile, Flavonoids contain antioxidants that function as antimicrobials and anti-inflammatories (Madhumita et al., 2020).



Figure 2. How to make and apply herbal therapy

In this program, the Team will always assist residents so that they can do their best; at least the skills and knowledge gained can be helpful to their own families. The Team believes this program will continue to increase according to the expected target. The Team is still conducting training and monitoring until the community service program is complete. Even though this program is complete, we have hope that the activity can continue as a flagship Posyandu program or that the local Health Center will intervene so that the observation and evaluation of healing of gangrene wounds, in particular, can continue and generate income from the skills that partners have acquired.

CONCLUSIONS AND RECOMMENDATIONS

Diabetes self-management education and support systems from the family are essential in diabetes care to prevent complications and stabilize blood sugar levels. To succeed, close coordination between patients, families, and the local health center is needed.

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